EPA OSWER Application of TCE Toxicity Data in Risk Assessment

Office of Solid Waste and Emergency Response
National Forum on Vapor Intrusion
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Context of TCE Toxicity

- TCE is very prevalent at hazardous waste sites
- EPA reassessment of TCE toxicity will not be completed for several years
- Regions left to make independent decisions resulting in inconsistency across the country

Current EPA Practices

- Maximum Contaminant Level (MCL) of 5 ppb is risk management standard for potential drinking water sources. Guidance will not effect groundwater MCL
- No similar EPA standard for vapor intrusion pathway
- Chemical toxicity hierarchy when no EPA values for risk assessment

OSWER Chemical Toxicity Hierarchy

- Tier 1: IRIS values, where available
- Tier 2: Preliminary Peer-Reviewed Toxicity Values, if developed
- Tier 3: Other peer-reviewed, publicly available values developed with similar methodology to IRIS and PPRTVs

Principles of ECOS Provisional Values Paper

- Transparency
- External, independent peer review
- Use of previously established, peer reviewed methodologies
- Best use of science/reproducible quality results
- Use high quality studies, and use all available science.
- Public availability; consider public comment
- (Toxicity value) consistent with duration of exposure being assessed.

Evaluation of Tier 3 Sources

- Primarily focused on California EPA and New York State Dept of Health
- Others considered but were not as consistent with the criteria recommended in the ECOS paper

Proposed Approach: Cancer Endpoint

- Use of Cal EPA inhalation unit risk value of 2.0 E-6$(ug/m^3)^{-1}$.
- Use Cal EPA oral cancer slope factor of 0.013 $(mg/kg\text{-}day)^{-1}$ for risk assessment

OSWER Preliminary Remediation Goal for Air (cancer-based)

1 ug/m3 in indoor air

"…corresponding to the 10-6 cancer risk level using the Cal EPA IUR, as the point of departure for determining remediation goals, and 1 ug/m3 to 100 ug/m3 as the generally acceptable concentration levels corresponding to 10-6 to 10-4 cancer risk, consistent with the National Contingency Plan (NCP) (40 CFR §300.430(e)(2)(i)(A)(2))."

OSWER Preliminary Remediation Goal for Drinking Water

- **Continue to use MCL of 5 ug/L for risk management of potential drinking water**

  "While this guidance recommends an oral CSF for use in risk assessments to provide an estimate of the cumulative risk at sites, this recommendation does not replace the general program requirements to meet applicable or relevant and appropriate requirements (ARARs) under CERCLA or the requirements under RCRA."

Reminder

- When other ground water exposure pathways may be complete (such as vapor intrusion into indoor air) or multiple contaminants are present, site-specific conditions should be evaluated to ensure that use of the MCL would be sufficiently protective as the remediation goal. The recommended oral cancer slope factors can be used to evaluate the risk posed by TCE when assessing the cumulative risk of TCE and other contaminants in ground water.

Proposed Approach: Noncancer Endpoint

Two Tier 3 Sources can be considered:

- 10 ug/m3 air criterion developed by the New York State Department of Health
  - http://www.health.state.ny.us/environmental/chemicals/trichloroethene/docs/cd_tce.pdf
- 600 ug/m3 Chronic Reference Exposure Level developed by Cal EPA
  - www.oehha.ca.gov/air/chronic_rel

OSWER Guidance states:

"While both the NYSDOH value and the Cal EPA REL are identified as Tier 3 toxicity values under the OSWER Toxicity Hierarchy, OSWER notes that the NYSDOH criterion is based on a more extensive presentation of health endpoints and a more recent evaluation of the available health effects literature."

Vapor Intrusion (VI) Recommendations

Use multiple lines of evidence to evaluate VI, which may include data on:

1) site history and geology, 2) ground water, 3) soil gas, 4) sub-slab soil gas, 5) crawlspace data, 6) indoor air, 7) outdoor air, 8) tracer compounds, 9) chemical ratios, 10) modeled concentrations, 11) chemical use.

VI Recommendations (cont'd.)

- Indoor air samples are useful where other data suggest a potential VI problem
- May be more expeditious to collect indoor air data in parallel with sub-slab soil gas or ground water data
- May be more efficient to mitigate before construction for new development

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